

Investment in Renovation and Modernization of state-level coal fired power plants in India

Public-Private Partnership (PPP)
Structuring Opportunities



Agenda/Contents

Utility-led Renovation and Modernisation (R&M) in India

Consideration of Transaction Options

- Rehabilitate – Operate – Maintain (ROM)
- Invest – Rehabilitate – Operate – Transfer
- Invest – Rehab/Replace – Operate – Transfer
- Variations in ownership structures

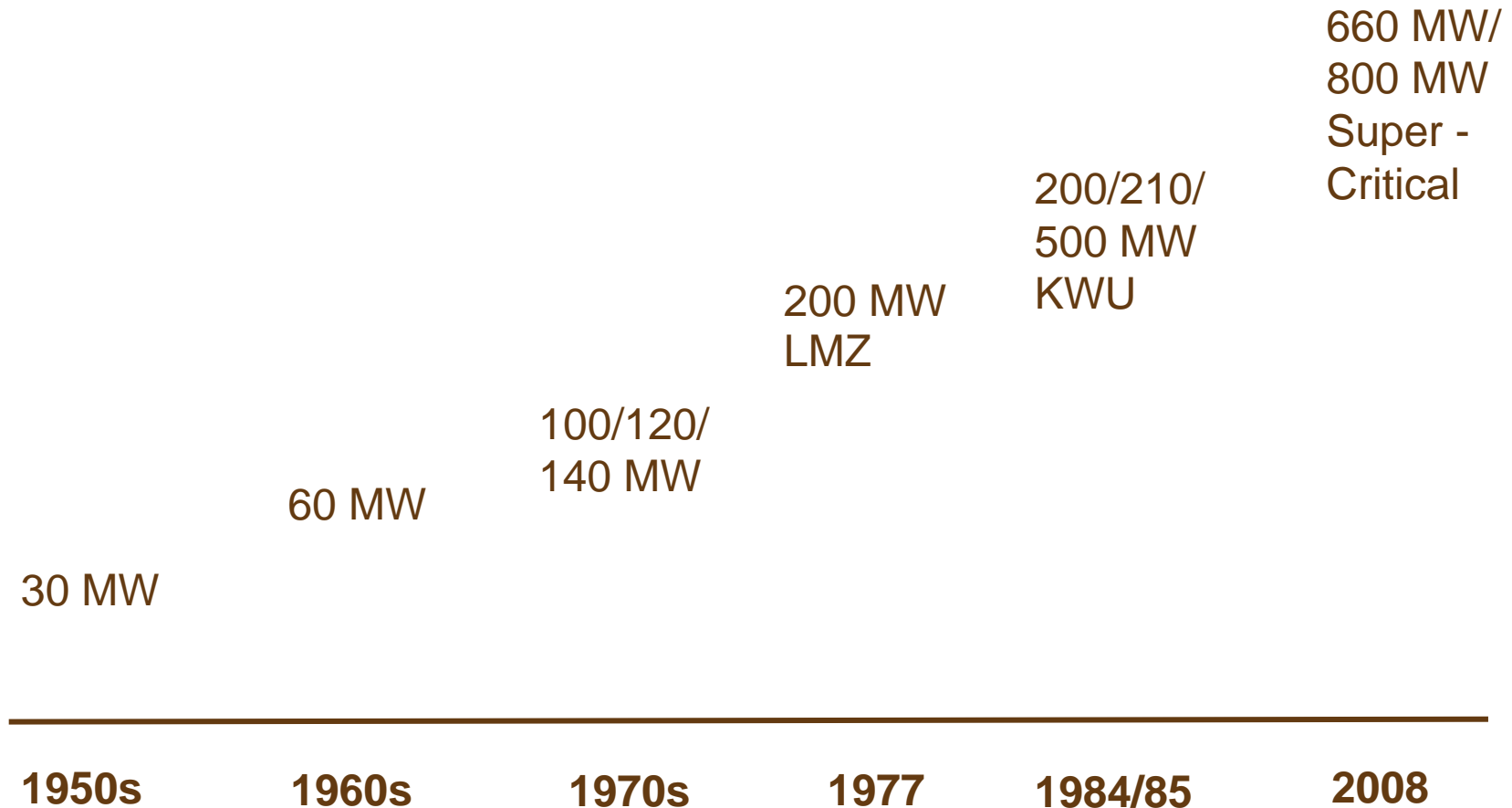
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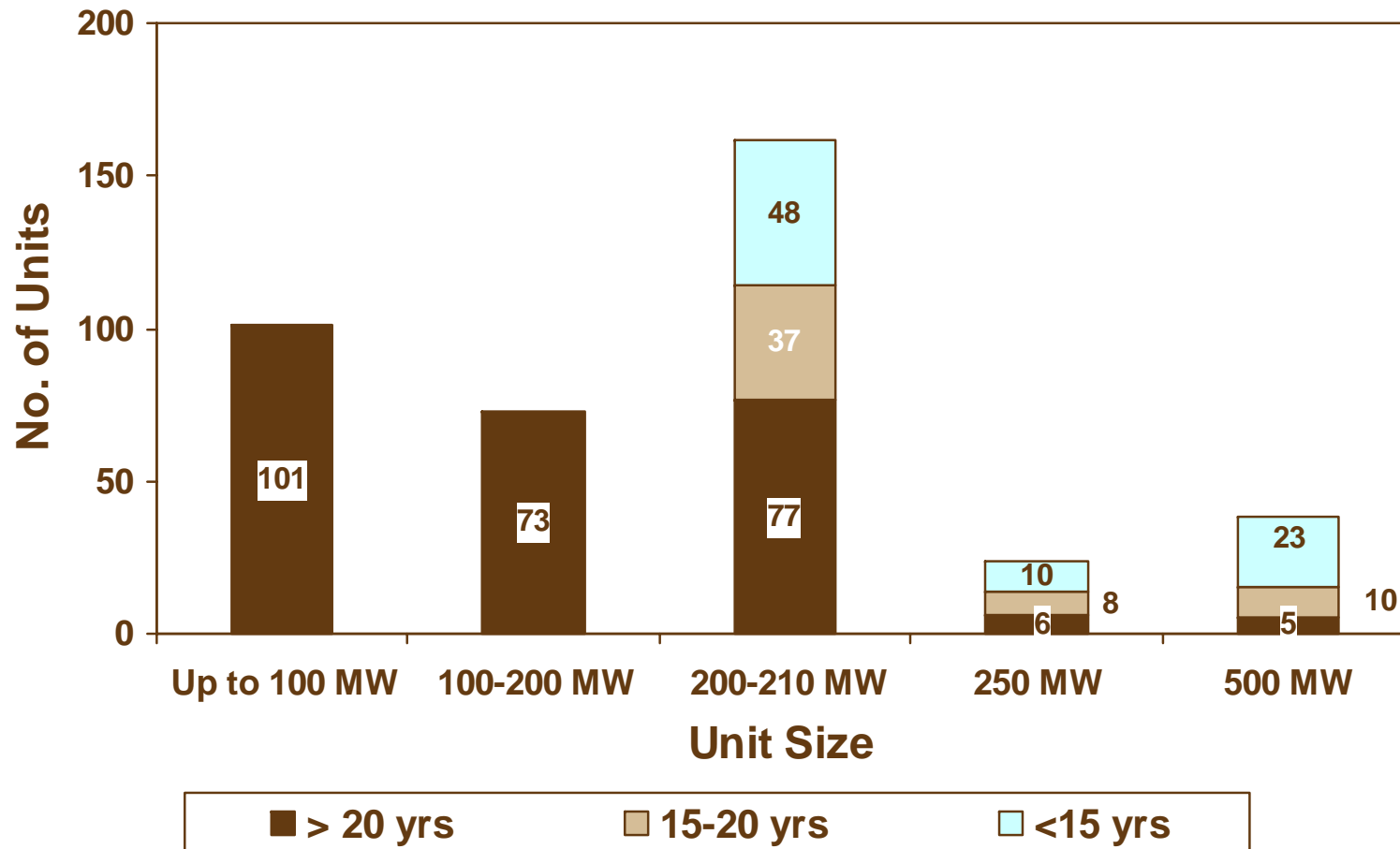
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Deployment of unit sizes in India



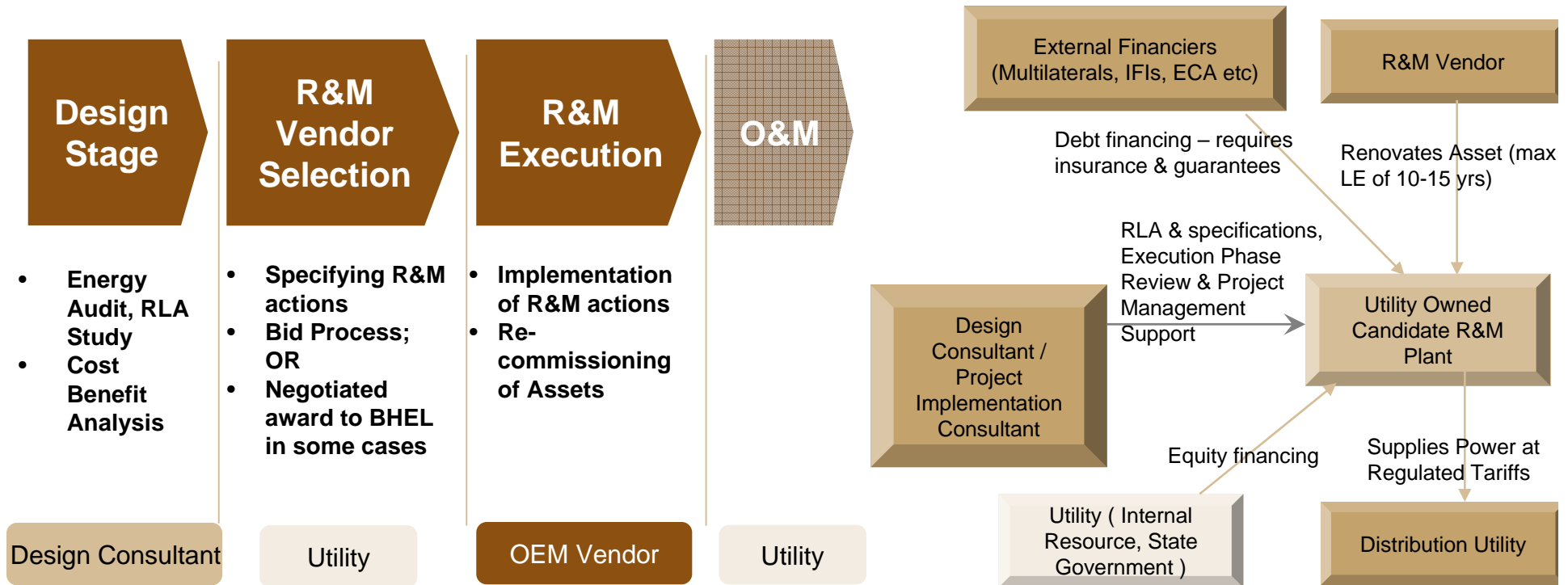
Source: CEA presentation

Distribution and age of units



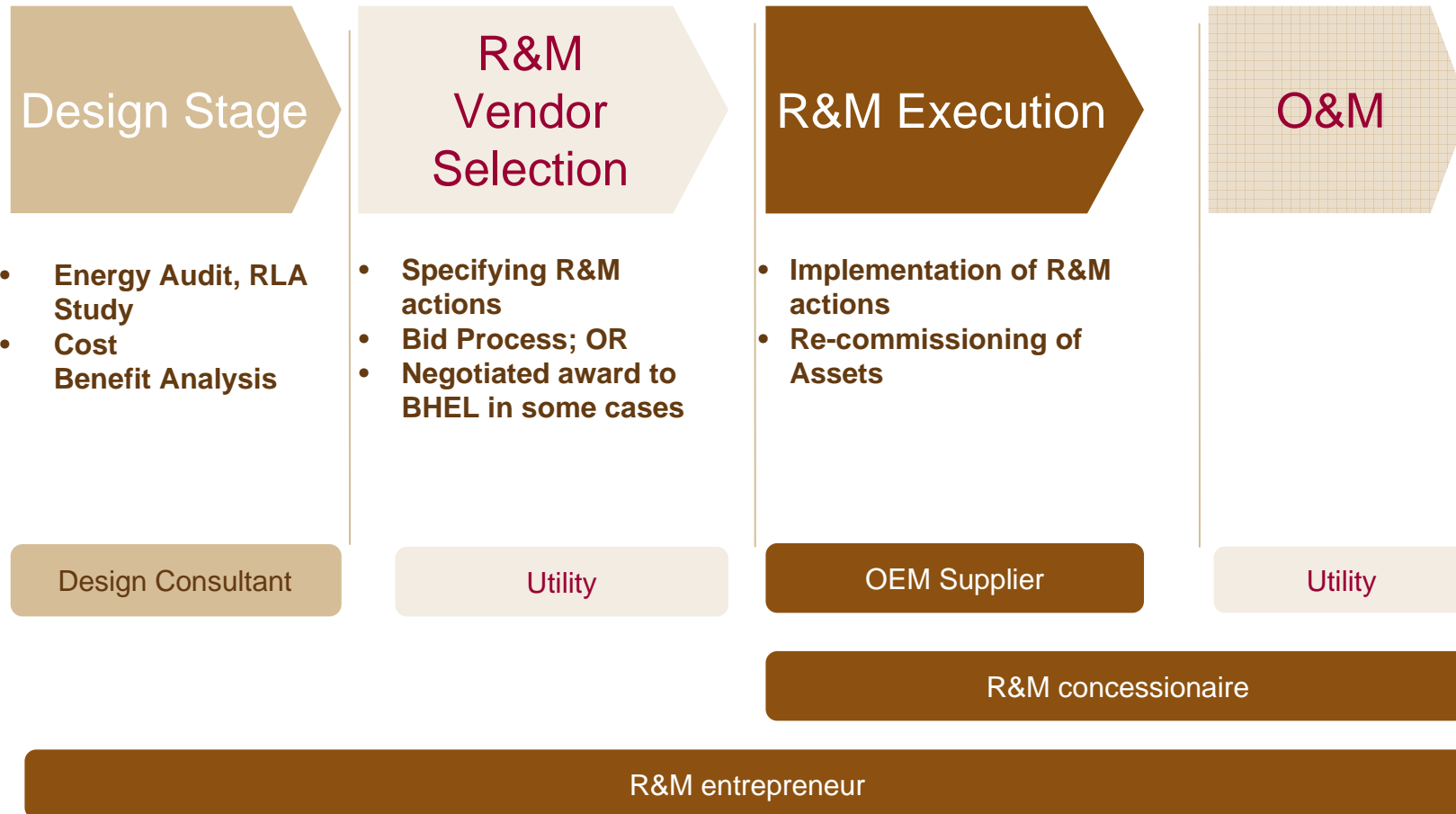
**Over 25,000 MW is due for R&M over 11th and 12th five year plan periods;
Estimated requirement of over \$7 Bn in investments**

Lack of life-cycle accountability!



- **Approvals/ financing constraints leads to delays between Design & Bidding**
- **Surprises at Execution Stage often results in higher than benchmark costs**
- **R&M low on priority because of subsisting energy deficits, lack of institutional capacity, comparable attractiveness of green-field projects, etc.**
- **Underperformance over O&M phase leads to sustainability issues**

Phases of R&M – PSP Opportunities across the life-cycle!



PPP – As a means of improving accountability

- 1995 GoI guidelines on R&M

- **Policy advocates 3 options**
 - **Lease, rehabilitate, operate and transfer (LROT)**
 - **Outright sale of plant and**
 - **Joint venture between SEB's and private companies**

- **Draft CEA Revised Guidelines on R&M of Power Stations indicate a similar strategy to be adopted by Utilities**

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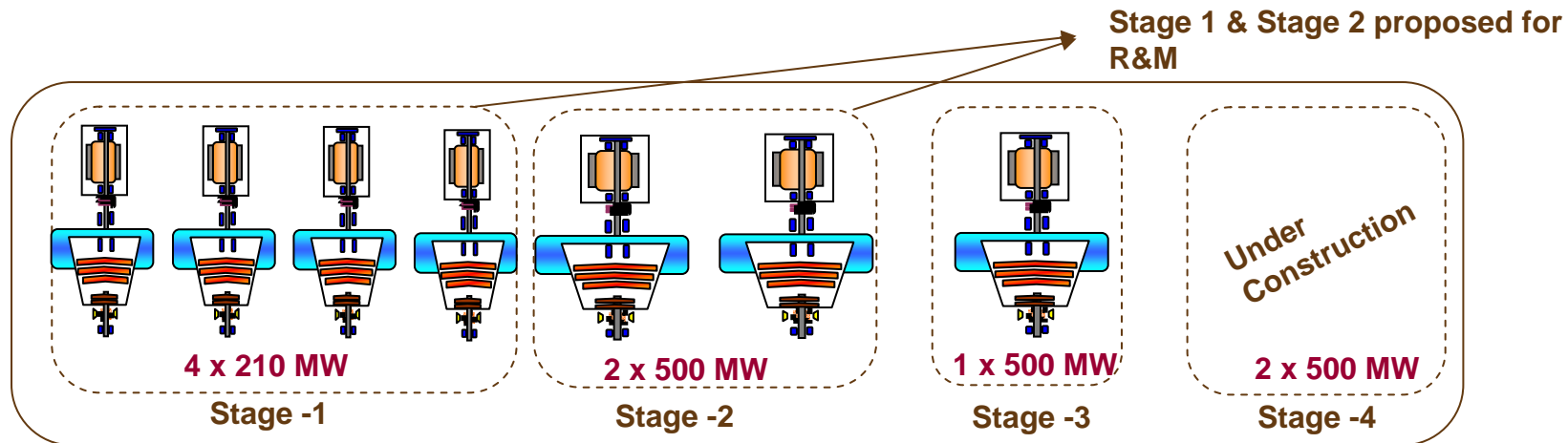
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Case – 1: Rehabilitate – Operate – Maintain Contract

Case – 1: Rehabilitate – Operate – Maintain Contract

Consideration of Transaction Options

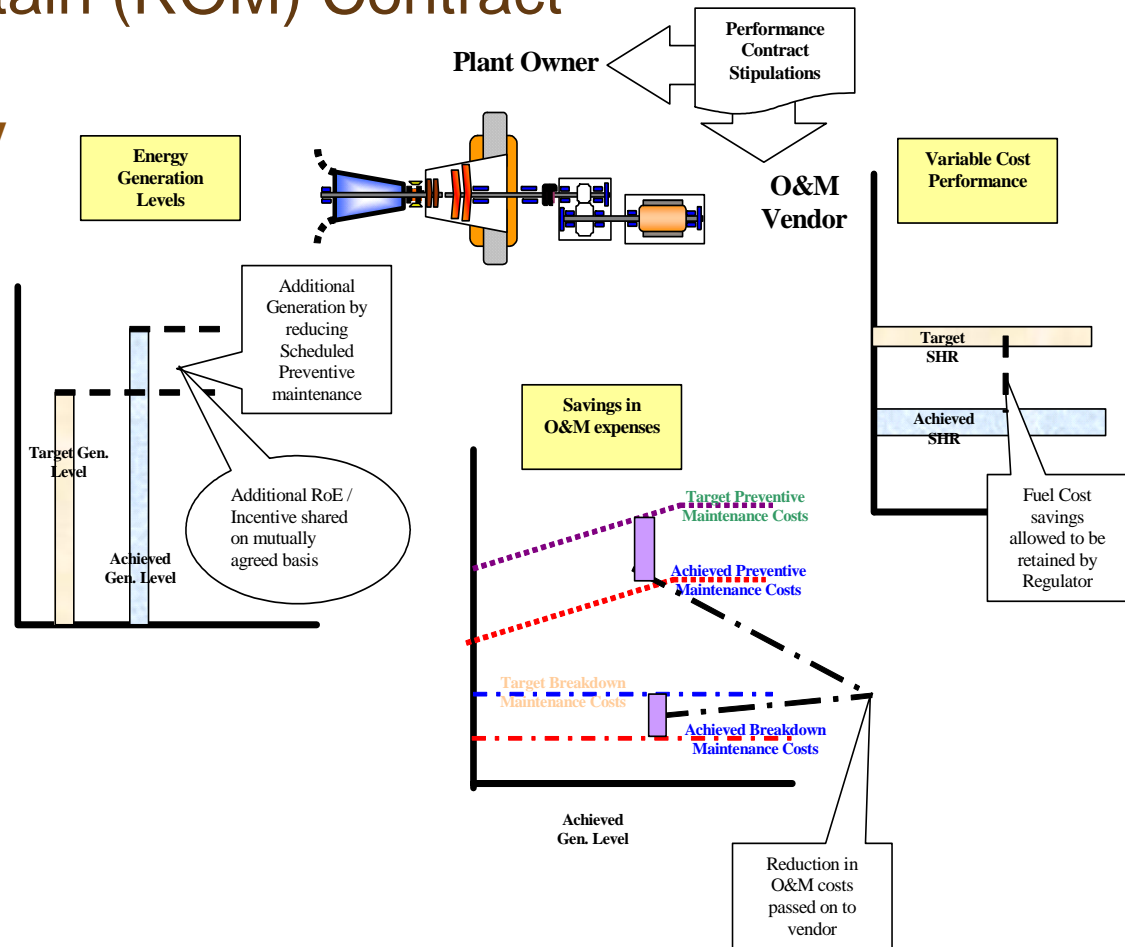
Case 1: 4-stage pit-head power plant



- **Staged CHP offers independent measurement and management of fuel input.**
- **In-house capacity expansion offers better redeployment options for utility employees – makes older units amenable to PPP options for proposed R&M.**
- **We discuss a simple PPP concept applicable to Stage 1 and Stage 2 keeping utility and State Government considerations in mind:**
 - **Private R&M vendor to be responsible for O&M for a 10 year period post R&M (with flexibility to extend term of contract)**

Rehabilitate-Operate-Maintain (ROM) Contract

- Investment made by the Utility but executed by the R&M vendor along with responsibility for O&M
 - Will ensure better accountability across the execution and O&M Phases
- ROM Contract to be structured to incentivise the private party over O&M phase subject to achievement of efficiencies.
- O&M Phase with
 - Guaranteed Availability
 - Station Heat Rate Benchmarks
 - Forced Outage Rate
 - Performance guarantees from the Vendor



- *National Power Corporation, Philippines adopted an ROM Approach for the 650 MW Malaya Thermal Power Station Complex*

Rehabilitate-Operate-Maintain (ROM) Contract

- Good design stage studies is essential starting point of the bidding process
- Proposed Bid Parameter
 - (1) Cost of R&M and (2) O&M for 1st contract year (to be escalated for 10 years as per CERC index)
 - NPV of (R&M + O&M) to be used for selection of vendor
 - O&M for 1st contract yr can be capped as a %age of cost of R&M to prevent transfer between non-escalable & escalable elements
 - Prior power plant development and operation experience is essential
- Regulatory process
 - Regulators are open to benchmark regulations
 - will be ready to adopt successful bidder's capital cost (which is within preset benchmarks, e.g., set with inputs from CEA) for the purpose of tariff setting
 - subject to competitiveness of R&M procurement process
 - and open to consideration of any major surprises post award

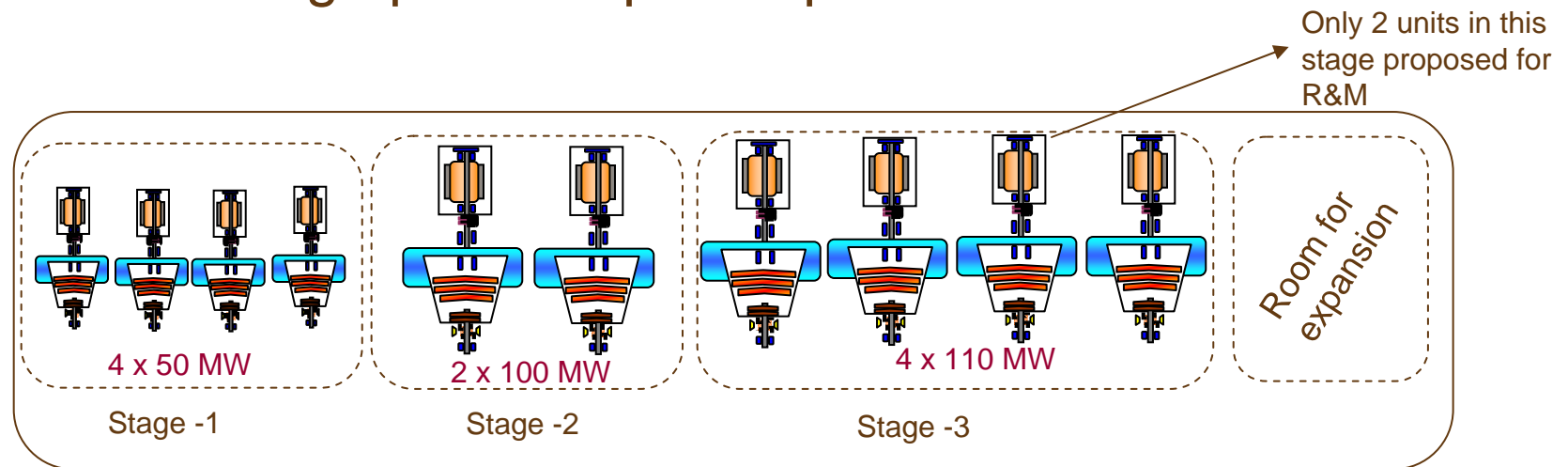
Conclusions on ROM Contracting

- Appropriate for projects where utility is capable of making investments in R&M
- Less effective than other forms of PPP but improves accountability across the execution and O&M phases
 - Few R&M vendors has been a concern in India; O&M stage incentives crucial to attract more bidders
- Requires regulatory action to set benchmarks for R&M investments and subsequent adoption of tendered out cost of R&M, if within such benchmarks
 - Regulators have also been open to considering major surprises post-award subject to prudence check & approval

Case – 2: Invest - Rehabilitate – Operate – Transfer Contract

Consideration of Transaction Options

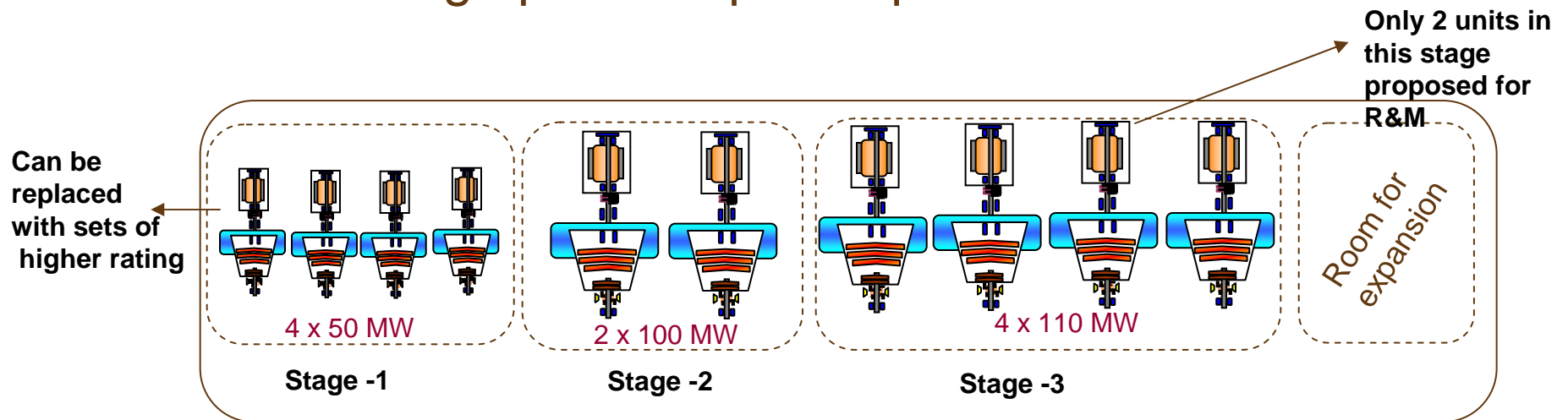
Case 2: Three-stage pit-head power plant



- The entire plant (840 MW) has a common Coal Handling Plant (CHP), control room and generation switchyard
- Overall station performance has been low; utility has very weak institutional capacity
- Although only 2 units in Stage 3 have been proposed for R&M, this is guided more by investment considerations than R&M eligibility norm
- State has limited ability to finance green or brown-field expansions.

Consideration of Transaction Options

Case 2: Three-stage pit-head power plant



- **Stage-1** should ideally be decommissioned but hasn't been proposed yet because of deficit considerations and over-dependence of the state on this plant.
 - Can be replaced with an efficiently sized unit when station availability improves
- Open to consider R&M for the entire plant, provided supply issues are appropriately addressed.
- Project offers significant room for further expansion, although these have not been fully planned out by the utility
- State open to PPP options, in view of limited in-house capability

Case 2 – Proposed Option

Invest-Rehabilitate-Operate-Transfer (IROT) Contract

- In a PPP structure, important to distinguish between legal ownership & contractual rights
- Legal ownership may have to continue with State Government because of public sensitivities
 - Option of transferring control and operation through long-term contracts (e.g. franchised operation); OR
 - State Govt made Joint Venture partner with or without (in lieu of land & other infrastructure) equity contribution.
- Where less sensitive, a sale of asset will also be considered as an option

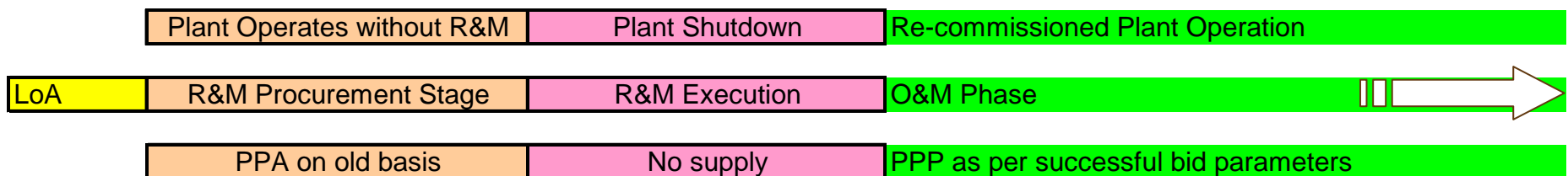
Consideration of Transaction Options

Case 2 – Proposed Option

Invest-Rehabilitate-Operate-Transfer (IROT) Contract

Term of concession

- Concession with respect to refurbished assets to last for a minimum of 15 years post-R&M; assets to be transferred back to utility at the end of this term.
- Concession for any capacities added in the station (including replacement of existing units) to last for a minimum of 25 years from the date of commissioning.



Case 2 – Proposed Option Invest-Rehabilitate-Operate-Transfer (IROT) Contract

Expected R&M outputs in the RFP

- To be established through technical assessment studies
 - Period of R&M OR Outer date for re-commissioning; can allow for incentives in RFP for earlier commissioning
 - Expected net capacity of the plant – gross capacity should preferably be restricted to rated unit capacities (840 MW in this case) with up-rating benefits left to investor for sale on merchant basis
 - Output from capacity / units added (beyond 840 MW) to be left to the discretion of the developer
 - Expected min efficiency of the plant; SHR to be a bid parameter for stations where coal is supplied by procurer
 - RFP to specify schedule of charges for lease and shared services, where applicable

Case 2 – Proposed Option

Invest-Rehabilitate-Operate-Transfer (IROT) Contract

Bidding Parameter

- Option 1: Bid out on the basis of lowest capex quote to rehabilitate; such capex to be adopted by the Regulator in normative tariff determination
- Option 2: Bid out on the basis of lowest levelised tariff quote; such tariff to be adopted by the Regulator

Policy / Regulatory Support

- Guidelines from MoP u/s 63 for adoption of discovered capex / tariff by Regulator

Case 2 – Proposed Option

Invest-Rehabilitate-Operate-Transfer (IROT) Contract

Upfront Payment to Generation Utility

- Is required to compensate for loss of returns over the remaining life of the assets transferred
- Gets factored into bids by the bidder and therefore will be subject to scrutiny of Regulator
 - CERC ruling on sale of Tanda power plant sets the depreciated book value as the transfer value for purpose of tariff determination
- Depreciated Book Value of assets is a transparent measure of upfront payment

Treatment of Land

- State Govts would prefer land to be leased out instead of being transferred regardless of ownership structures, as it is for public purpose and doesn't reflect market value in the books of utilities.
- Land lease charges for new capacities added at the plant site, should be at market-determined rates

Case 2 – Proposed Option

Invest-Rehabilitate-Operate-Transfer (IROT) Contract

End-of-concession Transfer Value – often a debatable issue in PPP transactions!

- Public authorities are uncomfortable in making payments at end of a concession
 - require however that assets be transferred back in sound operating condition
 - zero transfer value may remove concessionaire's incentives to invest in asset upkeep
- Zero end-of-concession transfer value is most commonly adopted as a clean & transparent structure for sufficiently long concession contracts.
 - Not the most efficient solution for contracts which are over shorter contract periods (say 15-20 years), as lack of transfer value gets loaded into bid value
- Not advisable to “value” assets at the end of the concession period, as these would link the utility back to inputs (investments) made by the concessionaire
- For shorter concession terms, say less than 20 years, transfer value can simply be equated to the Upfront Payment made by the successful bidder
 - May not completely obviate under-recoveries getting loaded on to quoted tariffs.
 - A transfer value, although not equal to the market value of assets, will act as an incentive to invest periodically in the upkeep of assets.

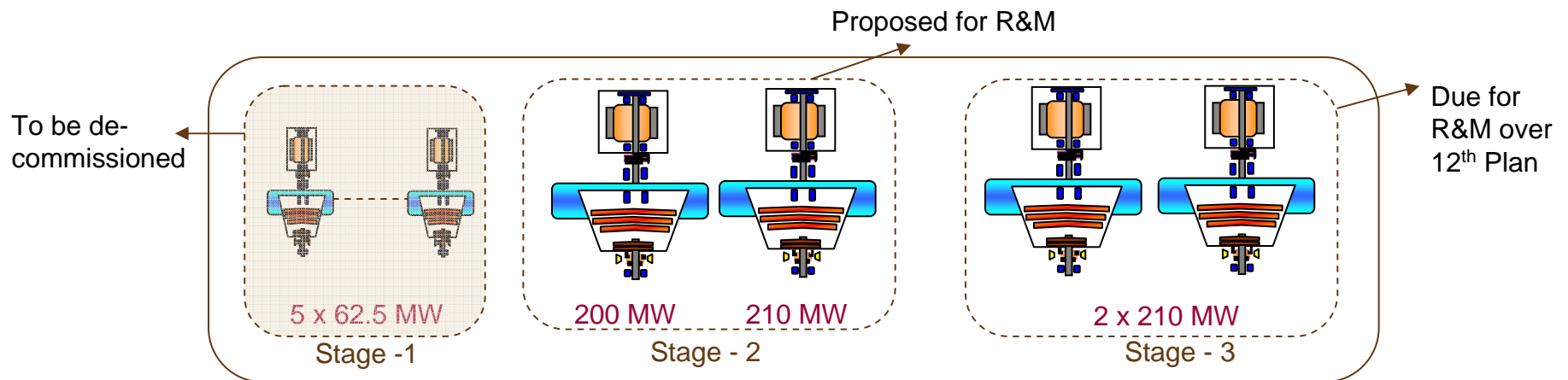
Conclusions on IROT Option

- Very effective option for improving accountability across the life-cycle.
 - untapped expansion potential, if any, adds to the attractiveness
 - structure needs to allow for untapped expansion to be at reasonable discretion of the investor over the useful life; and
 - for any up-rating benefits to be at investor's discretion
- Structure permits selection u/s 63 (guidelines require due amendment)
 - reduces any regulatory risk perception of investors; and
 - offers inherent incentives for efficiencies across the life-cycle
- Transfer of legal ownership not essential, provided full rights for commercial exploitation are appropriately transferred
 - Need openness to consider alternative ownership structures

Case – 3: Invest – Rehabilitate / Replace – Operate – Transfer Contract

Consideration of Transaction Options

Case 3: Three-stage pit-head power plant



- **Entire Plant (1,142.5 MW) has a common Coal Handling Plant (CHP)**
- **Stage 2 and Stage 3 are due for R&M**
- **Stage 1 is to be decommissioned and replaced with a 600 MW unit**
- **Option of considering the entire plant to be offered on PPP basis, which combines R&M for stage 2 & 3 with decommissioning and addition of new capacity at Stage 1**

Case 3 – Proposed Option

Invest – Rehab / Replace -Operate-Transfer (IR/ROT) Contract

Expected outputs in the RFP

- Gross capacity of Stage-2 and 3 of 830 MW (to be specified as net capacity) to be re-commissioned (say) maximum of 2 years from LoA
 - can allow for incentives in RFP for earlier commissioning
 - up-rating benefits to be left to investor for sale on merchant basis
- Stage 1 replacement capacity of 600 MW to be commissioned (say) maximum of 48 months from LoA
- Output from units added beyond these three stages to be left to the discretion of the developer
- Min efficiency of the R&M plants; SHR to be a bid parameter for stations where coal is supplied by procurer
- RFP to specify schedule of charges for lease and shared services, where applicable

Case 3 – Proposed Option

Invest – Rehab / Replace -Operate-Transfer (IR/ROT) Contract

Expected support from the utility

- Addition of new capacity is similar to Case-2 bidding conditions and therefore should follow MoP guidelines on preparatory activities to be undertaken by the utility prior to bidding, viz with regards to
 - Land acquisition (where applicable), environmental clearance, water and fuel arrangements and necessary data for DPR
- Allowing part of the capacity to be un-contracted for sale on merchant basis should be considered
 - Likely to lower tariff offered to utility and will improve project attractiveness for investor

Consideration of Transaction Options

Case 3 – Proposed Option

Invest – Rehab / Replace -Operate-Transfer (IR/ROT) Contract

Bidding Parameter

- Bid out on the basis of lowest levelised tariff quote; such tariff to be adopted by the Regulator
 - Bundling replacement capacity would require adherence with Case-2 bidding framework

Policy / Regulatory Support

- Guidelines from MoP u/s 63 for adoption of discovered tariff by Regulator

Conclusions on IR/ROT Option

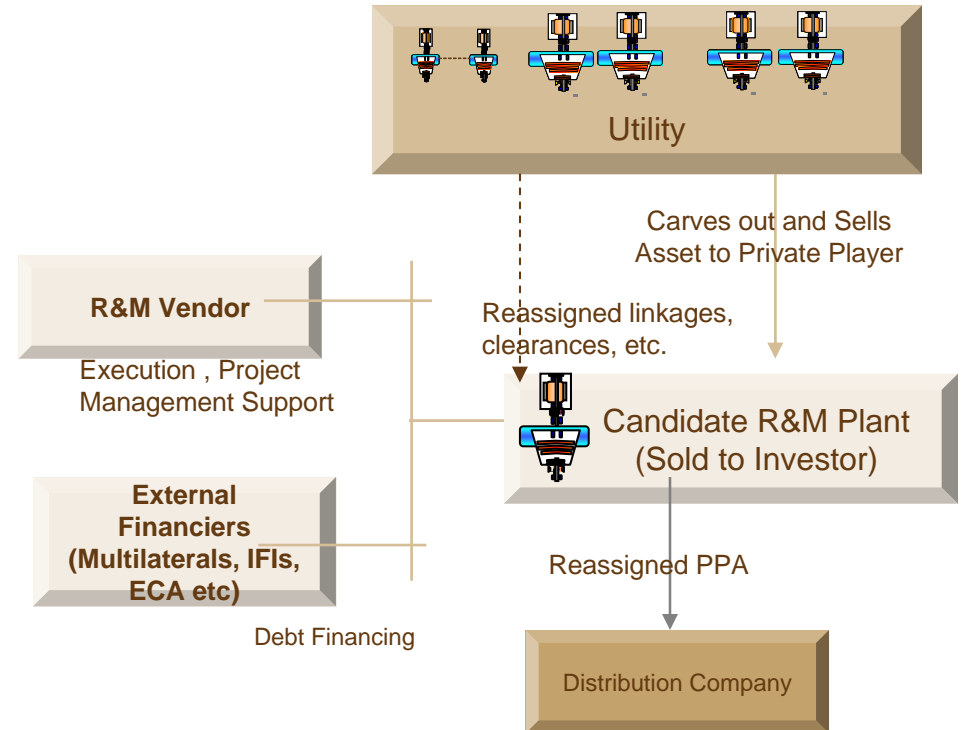
- Benefits similar to IROT option.
- Preparatory activities for replacement capacity would convey seriousness to investors
- MoP guidelines will require amendment to incorporate such an option to be bid out u/s 63 of the Electricity Act

Variations depending on ownership

Consideration of Transaction Options

Variations depending on ownership

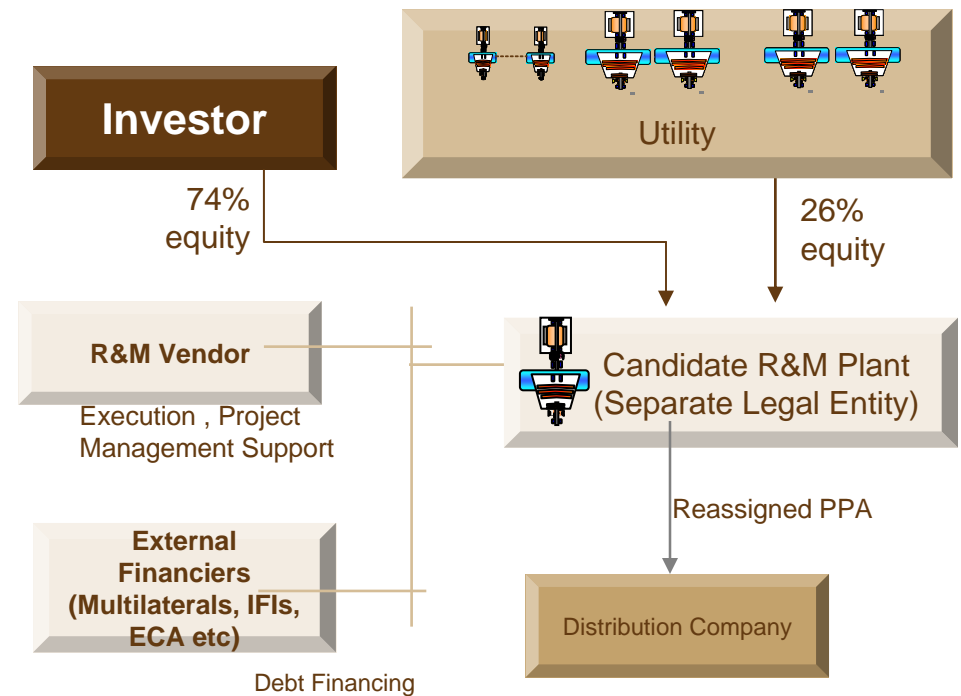
- Sale of plant
 - Cannot be at a premium, as the same would get loaded on to tariff bids and will be disallowed by the regulator.
 - Effectively similar to the Franchisee option
 - Land ownership is unlikely to be transferred; any exploitation for untapped expansion should be at market-determined lease charges.
 - Tax Considerations
 - Re-assignment of Fuel Supply Agreement and Power Purchase Agreements would be required.



Consideration of Transaction Options

Variations depending on ownership

- Joint Venture
 - Requires the creation of an SPV with carved out candidate plant
 - Preferable to some State Govts; viewed with caution by investors
 - Offers flexibility for transfer of full legal ownership rights to the SPV
 - State Govt equity participation should ideally not exceed 26% and could be offset against upfront payment and land acquisition charges
 - Selection of bidder should be on the basis of competitive bidding (on capex or tariff as in options discussed)



Can be a win-win for utility and investor (non-adversarial arrangement)

- Utility continues to have a stake in asset
- Investor doesn't have to make large upfront payment

Thank You

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